

Docket No. F-7337

Ser. No. 10/090,851

**AMENDMENTS TO THE CLAIMS:**

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Cancelled)

2. (Currently Amended) ~~[[The]]~~ A semiconductor nonvolatile storage element according to Claim 1, which is a ferroelectric nonvolatile storage element comprising:

a semiconductor substrate defining a source region, a drain region and a channel region between the source region and the drain region; and

a field effect transistor including a structure successively laminated with a first insulator layer, a first conductor layer, a ferroelectric layer and a second conductor layer on the channel region of the semiconductor substrate, the first insulator layer extending over the entire channel region to thereby completely separate the semiconductor substrate from the first conductor layer;

the field effect transistor further including a third conductor and a fourth conductor respectively formed on the source region and the drain region, the field effect transistor further comprising:

Docket No. F-7337

Ser. No. 10/090,851

a second insulator thin film between the third conductor and the first conductor layer and between the fourth conductor and the first conductor layer; and

wherein recesses and projections ~~[[are]]~~ included at a side wall of the first conductor layer opposed to the third and the fourth conductors and/or side walls of the third and the fourth conductors opposed to the first conductor layer.

3. (Currently Amended) The semiconductor nonvolatile storage element according to Claim ~~[[1 or]]~~ 2, wherein the semiconductor substrate is an SOI substrate.

4. (Currently Amended) The semiconductor nonvolatile storage element according to ~~any one of~~ Claim ~~[[1 or]]~~ 2, wherein an area of the second conductor layer above the ferroelectric layer is smaller than an area of the ferroelectric layer.

5. (Currently Amended) The semiconductor nonvolatile storage element according to ~~any one of~~ Claim ~~[[1 or]]~~ 2, wherein the second conductor layer is disposed above an element isolating region of the semiconductor substrate.

6. (Currently Amended) The semiconductor nonvolatile storage element according to ~~any one of~~ Claim ~~[[1 or]]~~ 2, wherein each of the first insulator layer and the second insulator thin film comprises a layer of one material or a layer laminated

Docket No. F-7337

Ser. No. 10/090,851

with two or more of materials selected from a group consisting of  $\text{SiO}_2$  (silicon oxide),  $\text{SiN}$  (silicon nitride),  $\text{SiON}$  (silicon oxynitride),  $\text{SiO}_2$ - $\text{SiN}$  (ON film: silicon oxide - silicon nitride),  $\text{SiO}_2$ - $\text{SiN}$ - $\text{SiO}_2$  (ONO film: silicon oxide - silicon nitride silicon oxide),  $\text{Ta}_2\text{O}_5$ ,  $\text{SrTiO}_3$ ,  $\text{TiO}_2$ ,  $(\text{Ba},\text{Sr})\text{TiO}_3$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{ZrO}_2$ ,  $\text{HfO}_2$ ,  $\text{Y}_2\text{O}_3$ ,  $\text{CeO}_2$ ,  $\text{CeZrO}_2$  and YSZ (yttrium oxide stabilized zirconium oxide).

7. (Currently Amended) The semiconductor nonvolatile storage element according to ~~any one of~~ Claim [[1 or]] 2, wherein the ferroelectric layer is a layer of one material selected from a group consisting of  $\text{SrBi}_2\text{Ta}_2\text{O}_9$ ,  $\text{PbTiO}_3$ ,  $\text{PbZr}_x\text{Ti}_{1-x}\text{O}_3$ ,  $\text{Pb}_y\text{La}_{1-y}\text{Zr}_x\text{Ti}_{1-x}\text{O}_3$ ,  $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ ,  $\text{SrNbO}_7$ ,  $\text{Pb}_3\text{Ge}_3\text{O}_{11}$  and  $\text{Sr}_2\text{Ta}_x\text{Nb}_{1-x}\text{O}_7$ .

8-16. (Cancelled)

17. (Currently Amended) [[The]] A semiconductor nonvolatile storage element according to Claim 1, wherein which is a ferroelectric nonvolatile storage element, comprising:

a semiconductor substrate defining a source region, a drain region and a channel region between the source region and the drain region; and  
a field effect transistor including a structure successively laminated with a first insulator layer, a first conductor layer, a ferroelectric layer and a second

Docket No. F-7337

Ser. No. 10/090,851

conductor layer on the channel region of the semiconductor substrate, the first insulator layer extending over the entire channel region to thereby completely separate the semiconductor substrate from the first conductor layer;

the field effect transistor further including a third conductor and a fourth conductor respectively formed on the source region and the drain region, the field effect transistor further comprising:

a second insulator thin film between the third conductor and the first conductor layer and between the fourth conductor and the first conductor layer; and

recesses and projections ~~[[are]]~~ included at a side wall of the third and the fourth conductors opposed to the first conductor layer.

18. (Currently Amended) ~~[[The]]~~ A semiconductor nonvolatile storage element ~~according to Claim 1, wherein~~ which is a ferroelectric nonvolatile storage element, comprising:

a semiconductor substrate defining a source region, a drain region and a channel region between the source region and the drain region; and

a field effect transistor including a structure successively laminated with a first insulator layer, a first conductor layer, a ferroelectric layer and a second conductor layer on the channel region of the semiconductor substrate, the first insulator layer extending over the entire channel region to thereby completely separate the semiconductor substrate from the first conductor layer;

Docket No. F-7337

Ser. No. 10/090,851

the field effect transistor further including a third conductor and a fourth conductor respectively formed on the source region and the drain region, the field effect transistor further comprising:

a second insulator thin film between the third conductor and the first conductor layer and between the fourth conductor and the first conductor layer; and

recesses and projections [[are]] included at a side wall of the first conductor layer opposed to the third and the fourth conductors.